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and claims the benefit of U.S. Provisional Application No. 60/209,857, filed June 7, 2000.

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Substitute the current version of paragraph [0095] with the following paragraph:

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a2

[0095] Impulse systems can measure distances to extremely fine resolution because of the absence of ambiguous cycles in the waveform. Narrow band systems, on the other hand, are limited to the modulation envelope and cannot easily distinguish precisely which RF cycle is associated with each data bit because the cycle-to-cycle amplitude differences are so small they are masked by link or system noise. Since the impulse radio waveform has no multi-cycle ambiguity, this allows positive determination of the waveform position to less than a wavelength - potentially, down to the noise floor of the system. This time position measurement can be used to measure propagation delay to determine link distance, and once link distance is known, to transfer a time reference to an equivalently high degree of precision. The inventors of the present invention have built systems that have shown the potential for centimeter distance resolution, which is equivalent to about 30 ps of time transfer resolution. See, for example, commonly owned, co-pending applications 09/045,929, filed March 23, 1998, titled "Ultrawide-Band Position Determination System and Method", and 09/083,993, filed May 26, 1998, titled "System and Method for Distance Measurement by In phase and Quadrature Signals in a Radio System", both of which are incorporated herein by reference.

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Substitute the current version of paragraph [0209] with the following paragraph:

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a3

[0209] In another embodiment of the present invention, in addition to placing each impulse in one-of-N positions within each frame, each impulse can also be flipped (i.e., inverted), thereby doubling the number of data states. Thus, in a one-of-four positions with shift modulation scheme, a non-inverted impulse can be located in one of four possible positions or an inverted impulse can be located in one of the

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four possible positions, providing for eight data states. Flip modulation was described in U.S. Patent Application No. 09/537,692, filed March 29, 2000, entitled "Apparatus, System and Method for Flip Modulation in an Impulse Radio Communications System," which is incorporated herein by reference in its entirety.

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